AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A system for determining a spectral content of an optical signal, comprising:

an optical hybrid for combining said optical signal and an optical local oscillator signal to generate phase-diverse components;

a plurality of photodetectors with each photodetector illuminated by a respective one of said phase-diverse components thereby mixing said optical signal and said optical local oscillator;

a plurality of bandpass filters for bandpass filtering signals from said plurality of photodetectors, wherein said bandpass filters generate filtered signals to coincide with a low-intensity noise region of said optical signal;

a plurality of mixers for mixing said filtered signals from said plurality of bandpass filters with an electrical local oscillator signal; and

a signal processing module that determines said spectral content utilizing signals from said plurality of mixers;

wherein said photodetectors are coupled in a serial arrangement and each of said bandpass filters is coupled to a respective node between two respective photodetectors of said plurality of photodetectors.

2. (Original) The system of claim 1 wherein said signal processing module separates negative images from positive images and that determines said spectral content from one or both of said negative images and said positive images.

3. (Original) The system of claim 1 wherein separation of negative images from positive images is performed by a digital signal processor.

4. (Original) The system of claim 1 further comprising:

a laser source for generating said optical local oscillator signal.

5. (Original) The system of claim 4 wherein said laser source sweeps said optical local oscillator across a predetermined spectrum.

6. (Original) The system of claim 1 further comprising:

a plurality of amplifiers for amplifying said signals from said plurality of photodetectors before said plurality of mixers are operable.

7. (Original) The system of claim 1 wherein said plurality of photodetectors are photodiodes.

8. (Canceled)

9. (Original) The system of claim 1 wherein said optical hybrid is an NxN optical coupler, wherein N>2.

10. (Original) The system of claim 1 wherein said optical hybrid is a network of optical couplers.

11. (Original) The system of claim 1 wherein said optical hybrid includes free space optical elements.

12. (Currently Amended) A method for determining a spectral content of an optical signal, comprising:

providing said optical signal as a first input, [[and]] an optical local oscillator signal as a second input, and a third input to ~~inputs of~~ an optical hybrid to generate phase-diverse components;

photodetecting said phase-diverse components using at least three photodiodes thereby mixing said optical signal with said local oscillator;

bandpass filtering signals from said photodetecting to generate filtered signals that correspond to a low intensity noise region of said optical signal;

mixing said filtered signals with an electrical local oscillator signal; and

determining a spectral content of said optical signal utilizing signals from said mixing.

13. (Original) The method of claim 12, wherein said determining comprises:

generating a quadrature signal representation from signals from said mixing; and

separating a negative image and a positive image from said quadrature signal representation.

14. (Original) The method of claim 12 further comprising:

amplifying signals from said photodetecting before performing said mixing.

15. (Canceled)

16. (Original) The method of claim 12 wherein said plurality of photodiodes are coupled in a serial arrangement and said bandpass filtering filters signals that are each received from nodes between two respective photodiodes of said plurality of photodiodes.

17. (Original) The method of claim 12 wherein said optical hybrid is an NxN optical coupler where N>2.

18. (Currently Amended) A system for determining a spectral content of an optical signal, comprising:

optical hybrid means for coupling said optical signal and an optical local oscillator signal to generate phase-diverse components;

~~a plurality of~~ at least three photodetector means with each photodetector means of photodetector means with each photodetector means illuminated by a respective one of said phase-diverse components thereby mixing said optical signal with said optical local oscillator signal;

a plurality of filtering means for bandpass filtering signals from said plurality of photodetector means to generate filtered signals that coincide with a minimal intensity noise region of said optical signal;

a plurality of mixer means for mixing said filtered signals with an electrical local oscillator signal; and

a signal processing means for determining said spectral content utilizing signals from said plurality of mixer means.

19. (Original) The system of claim 18 wherein said signal processing means is operable to generate a quadrature representation of a phase-diverse heterodyne signal.

20. (Original) The system of claim 19 wherein said signal processing means is operable to separate positive images from negative images that are associated with said phase-diverse heterodyne signal to determine said spectral content.